

SEQUENCE LISTING

<110> THE JOHNS HOPKINS UNIVERSITY
 WORLEY, Paul F.

<120> METHOD OF SCREENING FOR AGENTS THAT MODULATE
 IMMUNOPHILIN/PEPTIDYLPROLINE CIS-TRANS ISOMERASE (PPIASE) -HOMER
 INTERACTION

<130> JHU1880-1

<140> US 10/518,941
 <141> 2003-06-19

<150> PCT/US03/19499
 <151> 2003-06-18

<150> US 60/398,511
 <151> 2002-06-18

<160> 30

<170> PatentIn version 3.3

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 <223> Xaa can be any naturally occurring amino acid

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Pro Pro Xaa Xaa Phe
 1 5

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Thr Pro Pro Ser Pro Phe
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Pro Ser Ser Pro

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Leu Pro Ser Ser Pro Ser Ser Ser Ser Pro

1

5

10

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acaaggaatg tgtataggat aatcagtcta gacgggtcaa aggcaataat aaatagcacc 180

atcactccaa acatgacatt tactaaaaca tctcaaaagt ttggccaatg ggctgatagc 240

cgggcaaaca ctgtttatgg actgggatcc tcctctgagc atcatctctc aaaatttgca 300

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gaaaagtttc aggaatttaa agaagctgct cggctggcaa aggagaagtc gcaggagaag      360
atggaactga ccagtacccc ttcacaggaa tcagcaggag gagatcttca gtctccttta      420
acaccagaaa gtatcaatgg gacagatgat gagagaacac ccgatgtgac acagaactca      480
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Met Gly Glu Gln Pro Ile Phe Ser Thr Arg Ala His Val Phe Gln Ile
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Asp Pro Asn Thr Lys Lys Asn Trp Val Pro Thr Ser Lys His Ala Val
          20           25           30

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Thr Val Ser Tyr Phe Tyr Asp Ser Thr Arg Asn Val Tyr Arg Ile Ile
          35           40           45

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Ser Leu Asp Gly Ser Lys Ala Ile Ile Asn Ser Thr Ile Thr Pro Asn
          50           55           60

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Met Thr Phe Thr Lys Thr Ser Gln Lys Phe Gly Gln Trp Ala Asp Ser
65           70           75           80

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Arg Ala Asn Thr Val Tyr Gly Leu Gly Phe Ser Ser Glu His His Leu
          85           90           95

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Ser Lys Phe Ala Glu Lys Phe Gln Glu Phe Lys Glu Ala Ala Arg Leu
          100          105          110

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Ala Lys Glu Lys Ser Gln Glu Lys Met Glu Leu Thr Ser Thr Pro Ser
          115          120          125

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Gln Glu Ser Ala Gly Gly Asp Leu Gln Ser Pro Leu Thr Pro Glu Ser
          130          135          140

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Ile Asn Gly Thr Asp Asp Glu Arg Thr Pro Asp Val Thr Gln Asn Ser
145           150           155           160

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Glu Pro Arg Ala Glu Pro Ala Gln Asn Ala Leu Pro Phe Ser His Arg
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Tyr Thr Phe Asn Ser Ala Ile Met Ile Lys
 180 185

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 auuua

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Ser Ser Thr Leu
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Ser Ser Ser Leu
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Ala Val Thr Val
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Gly His Arg Phe
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Leu Pro Pro Pro Phe
 1 5

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Leu Pro Pro Pro Arg
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Leu Pro Leu Pro Phe
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Leu Leu Pro Pro Phe
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Leu Pro Ser Ser Ala Ser Ser Ser Ser Pro
1 5 10

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Ala Pro Ser Ser Pro Ser Ser Ser Ser Pro
1 5 10

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Leu Pro Ser Ser Pro Ser Ser Ser Ser Ala
1 5 10

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Leu Pro Ser Ser Pro
1 5

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Pro Pro Xaa Xaa Phe Arg
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Gly Leu Gly Phe
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Leu Ala Ser Ser Pro Ser Ser Ser Ser Pro
 1 5 10

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<212> PRT

<213> Homo sapiens

<400> 25

Met Cys Pro Gly Ile Pro Gly Pro Arg Ala Glu Ala Ala Val Gly Thr
 1 5 10 15

Thr His Pro Phe Ser Ser Pro Gly Ala Trp Leu Gly Ser Gly Ser Gly
 20 25 30

Ser Gly Pro Val Gly Ala Pro Pro Pro Ser Pro Gly Leu Pro Pro Ser
 35 40 45

Trp Ala Ala Met Met Ala Ala Leu Tyr Pro Ser Thr Asp Leu Ser Gly
 50 55 60

Ala Ser Ser Ser Ser Leu Pro Ser Ser Pro Ser Ser Ser Ser Pro Asn
 65 70 75 80

Glu Val Met Ala Leu Lys Asp Val Arg Glu Val Lys Glu Glu Asn Thr
 85 90 95

Leu Asn Glu Lys Leu Phe Leu Leu Ala Cys Asp Lys Gly Asp Tyr Tyr
 100 105 110

Met Val Lys Lys Ile Leu Glu Glu Asn Ser Ser Gly Asp Leu Asn Ile
 115 120 125

Asn Cys Val Asp Val Leu Gly Arg Asn Ala Val Thr Ile Thr Ile Glu
 130 135 140

Asn Glu Asn Leu Asp Ile Leu Gln Leu Leu Leu Asp Tyr Gly Cys Gln
 145 150 155 160

Lys Leu Met Glu Arg Ile Gln Asn Pro Glu Tyr Ser Thr Thr Met Asp
 165 170 175

Val Ala Pro Val Ile Leu Ala Ala His Arg Asn Asn Tyr Glu Ile Leu
 180 185 190

Thr Met Leu Leu Lys Gln Asp Val Ser Leu Pro Lys Pro His Ala Val
 195 200 205

Gly Cys Glu Cys Thr Leu Cys Ser Ala Lys Asn Lys Lys Asp Ser Leu
 210 215 220

Arg His Ser Arg Phe Arg Leu Asp Ile Tyr Arg Cys Leu Ala Ser Pro
 225 230 235 240

Ala Leu Ile Met Leu Thr Glu Glu Asp Pro Ile Leu Arg Ala Phe Glu
 245 250 255

Leu Ser Ala Asp Leu Lys Glu Leu Ser Leu Val Glu Val Glu Phe Arg
 260 265 270

Asn Asp Tyr Glu Glu Leu Ala Arg Gln Cys Lys Met Phe Ala Lys Asp
 275 280 285

Leu Leu Ala Gln Ala Arg Asn Ser Arg Glu Leu Glu Val Ile Leu Asn
 290 295 300

His Thr Ser Ser Asp Glu Pro Leu Asp Lys Arg Gly Leu Leu Glu Glu
 305 310 315 320

Arg Met Asn Leu Ser Arg Leu Lys Leu Ala Ile Lys Tyr Asn Gln Lys
 325 330 335

Glu Phe Val Ser Gln Ser Asn Cys Gln Gln Phe Leu Asn Thr Val Trp
 340 345 350

Phe Gly Gln Met Ser Gly Tyr Arg Arg Lys Pro Thr Cys Lys Lys Ile
 355 360 365

Met Thr Val Leu Thr Val Gly Ile Phe Trp Pro Val Leu Ser Leu Cys
 370 375 380

Tyr Leu Ile Ala Pro Lys Ser Gln Phe Gly Arg Ile Ile His Thr Pro
 385 390 395 400

Phe Met Lys Phe Ile Ile His Gly Ala Ser Tyr Phe Thr Phe Leu Leu
 405 410 415

Leu Leu Asn Leu Tyr Ser Leu Val Tyr Asn Glu Asp Lys Lys Asn Thr
 420 425 430

Met Gly Pro Ala Leu Glu Arg Ile Asp Tyr Leu Leu Ile Leu Trp Ile

435								440									445
Ile	Gly	Met	Ile	Trp	Ser	Asp	Ile	Lys	Arg	Leu	Trp	Tyr	Glu	Gly	Leu		
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Glu	Asp	Phe	Leu	Glu	Glu	Ser	Arg	Asn	Gln	Leu	Ser	Phe	Val	Met	Asn		
465					470					475					480		
Ser	Leu	Tyr	Leu	Ala	Thr	Phe	Ala	Leu	Lys	Val	Val	Ala	His	Asn	Lys		
				485					490					495			
Phe	His	Asp	Phe	Ala	Asp	Arg	Lys	Asp	Trp	Asp	Ala	Phe	His	Pro	Thr		
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Leu	Val	Ala	Glu	Gly	Leu	Phe	Ala	Phe	Ala	Asn	Val	Leu	Ser	Tyr	Leu		
		515					520					525					
Arg	Leu	Phe	Phe	Met	Tyr	Thr	Thr	Ser	Ser	Ile	Leu	Gly	Pro	Leu	Gln		
530						535					540						
Ile	Ser	Met	Gly	Gln	Met	Leu	Gln	Asp	Phe	Gly	Lys	Phe	Leu	Gly	Met		
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Phe	Leu	Leu	Val	Leu	Phe	Ser	Phe	Thr	Ile	Gly	Leu	Thr	Gln	Leu	Tyr		
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Asp	Lys	Gly	Tyr	Thr	Ser	Lys	Glu	Gln	Lys	Asp	Cys	Val	Gly	Ile	Phe		
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Cys	Glu	Gln	Gln	Ser	Asn	Asp	Thr	Phe	His	Ser	Phe	Ile	Gly	Thr	Cys		
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Phe	Ala	Leu	Phe	Trp	Tyr	Ile	Phe	Ser	Leu	Ala	His	Val	Ala	Ile	Phe		
	610					615					620						
Val	Thr	Arg	Phe	Ser	Tyr	Gly	Glu	Glu	Leu	Gln	Ser	Phe	Val	Gly	Ala		
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Val	Ile	Val	Gly	Thr	Tyr	Asn	Val	Val	Val	Val	Ile	Val	Leu	Thr	Lys		
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Leu	Leu	Val	Ala	Met	Leu	His	Lys	Ser	Phe	Gln	Leu	Ile	Ala	Asn	His		
			660					665					670				
Glu	Asp	Lys	Glu	Trp	Lys	Phe	Ala	Arg	Ala	Lys	Leu	Trp	Leu	Ser	Tyr		
		675					680					685					

Phe Asp Asp Lys Cys Thr Leu Pro Pro Pro Phe Asn Ile Ile Pro Ser
690 695 700

Pro Lys Thr Ile Cys Tyr Met Ile Ser Ser Leu Ser Lys Trp Ile Cys
705 710 715 720

Ser His Thr Ser Lys Gly Lys Val Lys Arg Gln Asn Ser Leu Lys Glu
725 730 735

Trp Arg Asn Leu Lys Gln Lys Arg Asp Glu Asn Tyr Gln Lys Val Met
740 745 750

Cys Cys Leu Val His Arg Tyr Leu Thr Ser Met Arg Gln Lys Met Gln
755 760 765

Ser Thr Asp Gln Ala Thr Val Glu Asn Leu Asn Glu Leu Arg Gln Asp
770 775 780

Leu Ser Lys Phe Arg Asn Glu Ile Arg Asp Leu Leu Gly Phe Arg Thr
785 790 795 800

Ser Lys Tyr Ala Met Phe Tyr Pro Arg Asn
805 810

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<213> *Drosophila melanogaster*

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Asp Val Glu Lys Asn Phe Ile Leu Ser Cys Glu Arg Gly Asp Leu Pro
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Gly Val Lys Lys Ile Leu Glu Glu Tyr Gln Gly Thr Asp Lys Phe Asn
20 25 30

Ile Asn Cys Thr Asp Pro Met Asn Arg Ser Ala Leu Ile Ser Ala Ile
35 40 45

Glu Asn Glu Asn Phe Asp Leu Met Val Ile Leu Leu Glu His Asn Ile
50 55 60

Glu Val Gly Asp Ala Leu Leu His Ala Ile Ser Glu Glu Tyr Val Glu
65 70 75 80

Ala Val Glu Glu Leu Leu Gln Trp Glu Glu Thr Asn His Lys Glu Gly
 85 90 95

Gln Pro Tyr Ser Trp Glu Ala Val Asp Arg Ser Lys Ser Thr Phe Thr
 100 105 110

Val Asp Ile Thr Pro Leu Ile Leu Ala Ala His Arg Asn Asn Tyr Glu
 115 120 125

Ile Leu Lys Ile Leu Leu Asp Arg Gly Ala Thr Leu Pro Met Pro His
 130 135 140

Asp Val Lys Cys Gly Cys Asp Glu Cys Val Thr Ser Gln Thr Thr Asp
 145 150 155 160

Ser Leu Arg His Ser Gln Ser Arg Ile Asn Ala Tyr Arg Ala Leu Ser
 165 170 175

Ala Ser Ser Leu Ile Ala Leu Ser Ser Arg Asp Pro Val Leu Thr Val
 180 185 190

Phe Gln Leu Ser Trp Glu Leu Lys Arg Leu Gln Ala Met Glu Ser Glu
 195 200 205

Phe Arg Ala Glu Tyr Thr Glu Met Arg Gln Met Val Gln Asp Phe Gly
 210 215 220

Thr Ser Leu Leu Asp His Ala Arg Thr Ser Met Glu Leu Glu Val Met
 225 230 235 240

Leu Asn Phe Asn His Glu Pro Ser His Asp Ile Trp Cys Leu Gly Gln
 245 250 255

Arg Gln Thr Leu Glu Arg Leu Lys Leu Ala Ile Arg Tyr Lys Gln Lys
 260 265 270

Thr Phe Val Ala His Pro Asn Val Gln Gln Leu Leu Ala Ala Ile Trp
 275 280 285

Tyr Asp Gly Leu Pro Gly Phe Arg Arg Lys Gln Ala Ser Gln Gln Leu
 290 295 300

Met Asp Val Val Lys Leu Gly Cys Ser Phe Pro Ile Tyr Ser Leu Lys
 305 310 315 320

Tyr Ile Leu Ala Pro Asp Ser Glu Gly Ala Lys Phe Met Arg Lys Pro

325										330					335				
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Leu	Leu	Gly	Ala	Ala	Ser	Leu	Arg	Val	Val	Gln	Ile	Thr	Phe	Glu	Leu				
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Leu	Ala	Phe	Pro	Trp	Met	Leu	Thr	Met	Leu	Glu	Asp	Trp	Arg	Lys	His				
	370					375					380								
Glu	Arg	Gly	Ser	Leu	Pro	Gly	Pro	Ile	Glu	Leu	Ala	Ile	Ile	Thr	Tyr				
385					390					395					400				
Ile	Met	Ala	Leu	Ile	Phe	Glu	Glu	Leu	Lys	Ser	Leu	Tyr	Ser	Asp	Gly				
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Leu	Phe	Glu	Tyr	Ile	Met	Asp	Leu	Trp	Asn	Ile	Val	Asp	Tyr	Ile	Ser				
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Asn	Met	Phe	Tyr	Val	Thr	Trp	Ile	Leu	Cys	Arg	Ala	Thr	Ala	Trp	Val				
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Ile	Val	His	Arg	Asp	Leu	Trp	Phe	Arg	Gly	Ile	Asp	Pro	Tyr	Phe	Pro				
	450					455					460								
Arg	Glu	His	Trp	His	Pro	Phe	Asp	Pro	Met	Leu	Leu	Ser	Glu	Gly	Ala				
465					470					475					480				
Phe	Ala	Ala	Gly	Met	Val	Phe	Ser	Tyr	Leu	Lys	Leu	Val	His	Ile	Phe				
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Ser	Ile	Asn	Pro	His	Leu	Gly	Pro	Leu	Gln	Val	Ser	Leu	Gly	Arg	Met				
			500					505					510						
Ile	Ile	Asp	Ile	Ile	Lys	Phe	Phe	Phe	Ile	Tyr	Thr	Leu	Val	Leu	Phe				
		515					520					525							
Ala	Phe	Gly	Cys	Gly	Leu	Asn	Gln	Leu	Leu	Trp	Tyr	Tyr	Ala	Glu	Leu				
	530					535					540								
Glu	Lys	Asn	Lys	Cys	Tyr	His	Leu	His	Pro	Asp	Val	Ala	Asp	Phe	Asp				
545					550					555					560				
Asp	Gln	Glu	Lys	Ala	Cys	Thr	Ile	Trp	Arg	Arg	Phe	Ser	Asn	Leu	Phe				
				565					570					575					

Glu Thr Ser Gln Ser Leu Phe Trp Ala Ser Phe Gly Leu Val Asp Leu
580 585 590

Val Ser Phe Asp Leu Ala Gly Ile Lys Ser Phe Thr Arg Phe Trp Ala
595 600 605

Leu Leu Met Phe Gly Ser Tyr Ser Val Ile Asn Ile Ile Val Leu Leu
610 615 620

Asn Met Leu Ile Ala Met Met Ser Asn Ser Tyr Gln Ile Ile Ser Glu
625 630 635 640

Arg Ala Asp Thr Glu Trp Lys Phe Ala Arg Ser Gln Leu Trp Met Ser
645 650 655

Tyr Phe Glu Asp Gly Gly Thr Ile Pro Pro Pro Phe Asn Leu Cys Pro
660 665 670

Asn Met Lys Met Leu Arg Lys Thr Leu Gly Arg Lys Arg Pro Ser Arg
675 680 685

Thr Lys Ser Phe Met Arg Lys Ser Met Glu Arg Ala Gln Thr Leu His
690 695 700

Asp Lys Val Met Lys Leu Leu Val Arg Arg Tyr Ile Thr Ala Glu Gln
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Arg Gln Asp Ile Ser Ser
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Asn Val Arg Arg Ile Leu Gln Lys Ala Leu Arg His Gln His Ile Asn
20 25 30

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		35					40					45			
Asp	Asn	Glu	Asn	Leu	Glu	Met	Val	Glu	Leu	Leu	Val	Val	Met	Gly	Val
	50					55					60				
Glu	Thr	Lys	Asp	Ala	Leu	Leu	His	Ala	Ile	Asn	Ala	Glu	Phe	Val	Glu
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Ala	Val	Glu	Leu	Leu	Leu	Glu	His	Glu	Glu	Leu	Ile	Tyr	Lys	Glu	Gly
				85					90					95	
Glu	Pro	Tyr	Ser	Trp	Gln	Lys	Val	Asp	Ile	Asn	Thr	Ala	Met	Phe	Ala
			100					105					110		
Pro	Asp	Ile	Thr	Pro	Leu	Met	Leu	Ala	Ala	His	Lys	Asn	Asn	Phe	Glu
		115					120					125			
Ile	Leu	Arg	Ile	Leu	Leu	Asp	Arg	Gly	Ala	Ala	Val	Pro	Val	Pro	His
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Asp	Ile	Arg	Cys	Gly	Cys	Glu	Glu	Cys	Val	Arg	Leu	Thr	Ala	Glu	Asp
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Ser	Leu	Arg	His	Ser	Leu	Ser	Arg	Val	Asn	Ile	Tyr	Arg	Ala	Leu	Cys
			165						170					175	
Ser	Pro	Ser	Leu	Ile	Cys	Leu	Thr	Ser	Asn	Asp	Pro	Ser	Ser	Thr	Ala
			180					185					190		
Phe	Gln	Leu	Ser	Trp	Glu	Leu	Arg	Asn	Leu	Ala	Leu	Thr	Glu	Gln	Glu
	195						200						205		
Cys	Lys	Ser	Glu	Tyr	Met	Asp	Leu	Arg	Arg	Gln	Cys	Gln	Lys	Phe	Ala
	210					215					220				
Val	Asp	Leu	Leu	Asp	Gln	Thr	Arg	Thr	Ser	Asn	Glu	Leu	Ala	Ile	Ile
225					230					235					240
Leu	Asn	Tyr	Asp	Pro	Gln	Met	Ser	Ser	Tyr	Glu	Pro	Gly	Asp	Arg	Met
				245					250					255	
Ser	Leu	Thr	Arg	Leu	Val	Gln	Ala	Ile	Ser	Tyr	Lys	Gln	Lys	Lys	Phe
			260					265					270		
Val	Ala	His	Ser	Asn	Ile	Gln	Gln	Leu	Leu	Ser	Ser	Ile	Trp	Tyr	Asp

275		280		285											
Gly	Leu	Pro	Gly	Phe	Arg	Arg	Lys	Ser	Ile	Val	Asp	Lys	Val	Ile	Cys
290						295					300				
Ile	Ala	Gln	Val	Ala	Val	Leu	Phe	Pro	Leu	Tyr	Cys	Leu	Ile	Tyr	Met
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Cys	Ala	Pro	Asn	Cys	Arg	Thr	Gly	Gln	Leu	Met	Arg	Lys	Pro	Phe	Met
				325					330					335	
Lys	Phe	Leu	Ile	His	Ala	Ser	Ser	Tyr	Leu	Phe	Phe	Leu	Phe	Ile	Leu
			340					345					350		
Ile	Leu	Val	Ser	Gln	Arg	Ala	Asp	Asp	Asp	Phe	Val	Arg	Ile	Phe	Gly
	355						360					365			
Thr	Thr	Arg	Met	Lys	Lys	Glu	Leu	Ala	Glu	Gln	Glu	Leu	Arg	Gln	Arg
	370					375					380				
Gly	Gln	Thr	Pro	Ser	Lys	Leu	Glu	Leu	Ile	Val	Val	Met	Tyr	Val	Ile
385					390					395					400
Gly	Phe	Val	Trp	Glu	Glu	Val	Lys	Glu	Ile	Phe	Ala	Val	Gly	Met	Lys
				405					410					415	
Ser	Tyr	Leu	Arg	Asn	Met	Trp	Asn	Phe	Ile	Asp	Phe	Leu	Arg	Asn	Ser
			420					425					430		
Leu	Tyr	Val	Ser	Val	Met	Cys	Leu	Arg	Ala	Phe	Ala	Tyr	Ile	Gln	Gln
	435						440					445			
Ala	Thr	Glu	Ile	Ala	Arg	Asp	Pro	Gln	Met	Ala	Tyr	Ile	Pro	Arg	Glu
	450					455					460				
Lys	Trp	His	Asp	Phe	Asp	Pro	Gln	Leu	Ile	Ala	Glu	Gly	Leu	Phe	Ala
465					470					475					480
Ala	Ala	Asn	Val	Phe	Ser	Ala	Leu	Lys	Leu	Val	His	Leu	Phe	Ser	Ile
				485					490					495	
Asn	Pro	His	Leu	Gly	Pro	Leu	Gln	Ile	Ser	Leu	Gly	Arg	Met	Val	Ile
			500					505					510		
Asp	Ile	Val	Lys	Phe	Phe	Phe	Ile	Tyr	Thr	Leu	Val	Leu	Phe	Ala	Phe
	515						520					525			

Ala Cys Gly Leu Asn Gln Leu Leu Trp Tyr Phe Ala Ala Leu Glu Lys
 530 535 540

Ser Lys Cys Tyr Val Leu Pro Gly Gly Glu Ala Asp Trp Gly Ser His
 545 550 555 560

Gly Asp Ser Cys Met Lys Trp Arg Arg Phe Gly Asn Leu Phe Glu Ser
 565 570 575

Ser Gln Ser Leu Phe Trp Ala Ser Phe Gly Met Val Gly Leu Asp Asp
 580 585 590

Phe Glu Leu Ser Gly Ile Lys Ser Tyr Thr Arg Phe Trp Gly Leu Leu
 595 600 605

Met Phe Gly Ser Tyr Ser Val Ile Asn Val Ile Val Leu Leu Asn Leu
 610 615 620

Leu Ile Ala Met Met Ser Asn Ser Tyr Ala Met Ile Asp Glu His Ser
 625 630 635 640

Asp Thr Glu Trp Lys Phe Ala Arg Thr Lys Leu Trp Met Ser Tyr Phe
 645 650 655

Glu Asp Ser Ala Thr Leu Pro Pro Pro Phe Asn Val Leu Pro Ser Val
 660 665 670

Lys Trp Val Ile Arg Ile Phe Arg Lys Ser Ser Lys Thr Ile Asp Arg
 675 680 685

Gln Arg Ser Lys Lys Arg Lys Glu Gln Glu Gln Phe Ser Glu Tyr Asp
 690 695 700

Asn Ile Met Arg Ser Leu Val Trp Arg Tyr Val Ala Ala Met His Arg
 705 710 715 720

Lys Phe Glu Asn Asn Pro Val Ser Glu Asp Asp Ile Asn Glu Val Lys
 725 730 735

Ser Glu Ile Asn Thr
 740

<210> 28
 <211> 754
 <212> PRT

<213> *Caenorhabditis elegans*

<400> 28

Asn Asn Leu Phe Arg Phe Leu Glu Ala Ala Glu Leu Gly Asn Lys Pro
1 5 10 15

Thr Leu Gln Glu Cys Leu Asp Tyr Asp Gly Asp Arg Arg Leu Asn Val
20 25 30

Asn Cys Leu Asp Ser Met Gly Arg Thr Ala Leu Glu Ile Ala Val Asp
35 40 45

Asn Glu Asn Met Glu Val Val Glu Leu Leu Leu Gln Gln Pro Asp Ile
50 55 60

Arg Ile Gly Asn Ala Leu Leu Cys Ala Ile Arg Glu Gly Val Tyr Arg
65 70 75 80

Leu Val Glu Val Leu Val Asn His Pro Asn Ile Thr Arg Glu Met Leu
85 90 95

Gly Asp Gly Trp Ser Gln Ala Leu Asp Pro Ser Glu Ala Ala Ser Ala
100 105 110

Glu Tyr Ser Ser Asp Ile Ser Pro Val Ile Leu Ala Ala Gln Leu Asn
115 120 125

Gln Phe Glu Ile Leu Gln Met Leu Ile Arg Lys Asp Ala Ser Ile Glu
130 135 140

Lys Pro His Arg His Ser Cys Ile Cys Glu Thr Cys Asp Arg Glu Arg
145 150 155 160

Leu Asn Asp Ser Leu Gln Tyr Ser Leu Lys Arg Ile Asn Thr Phe Arg
165 170 175

Ala Leu Ala Ser Pro Ala Trp Met Ser Leu Thr Ser Pro Asp Pro Ile
180 185 190

Leu Ser Ala Phe Lys Leu Ser Trp Asp Leu Gln Arg Leu Ala Phe Glu
195 200 205

Glu His Glu Phe Lys Glu Thr Tyr Leu Gln Leu Ser Glu Gln Cys Lys
210 215 220

Gln Tyr Ser Cys Asp Leu Leu Ser Gln Cys Arg Ser Ser Glu Glu Val

225		230		235		240
Ile Ala Ile Leu Asn Lys Asp Gly Asn Val Asn Asp Asp Asn Ile Asp						
		245		250		255
Val Trp Ala Ser Lys Leu Ser Leu Ser Arg Leu Lys Leu Ala Ile Lys						
		260		265		270
Tyr Glu Gln Lys Ala Phe Val Ser His Pro His Cys Gln Gln Leu Leu						
		275		280		285
Thr Ser Ile Trp Tyr Glu Gly Ile Pro Tyr Arg Gln Arg Ser Gly Thr						
		290		295		300
Trp Ala Asn Phe Phe Leu Tyr Ala Phe Leu Leu Phe Leu Trp Pro Ile						
		305		310		315
Phe Cys Leu Met Tyr Ile Leu Met Pro Lys Ser Arg Leu Gly Arg Leu						
		325		330		335
Val Arg Ser Pro Phe Met Lys Phe Phe Tyr Tyr Ser Val Ser Phe Ala						
		340		345		350
Thr Phe Leu Gly Leu Leu Thr Trp Ala Thr Phe Glu Asp Tyr Arg Tyr						
		355		360		365
Glu Lys Gly Glu Arg Gly Gly Met Thr Arg Ala Ser Asp Arg Gly Pro						
		370		375		380
Pro Ala Thr Trp Val Glu Ser Leu Val Phe Thr Trp Val Ile Gly Met						
		385		390		395
Leu Trp Ser Glu Ile Lys Gln Leu Trp Glu Glu Gly Phe Lys Arg Tyr						
		405		410		415
Met Arg Gln Trp Trp Asn Trp Leu Asp Phe Leu Met Ile Cys Leu Tyr						
		420		425		430
Leu Cys Thr Ile Ser Ile Arg Leu Ser Ala Tyr Tyr Ile Phe Thr Tyr						
		435		440		445
Arg Glu Asp Pro Tyr Arg Tyr Thr Val Arg Thr Tyr Trp Thr Ser Glu						
		450		455		460
Glu Pro Met Leu Val Ala Glu Ala Leu Phe Ala Val Gly Asn Val Phe						
		465		470		475
						480

Ser Phe Ala Arg Ile Ile Tyr Leu Phe Gln Thr Asn Pro Tyr Leu Gly
 485 490 495

Pro Leu Gln Ile Ser Leu Gly Cys Met Leu Val Asp Val Ala Lys Phe
 500 505 510

Cys Phe Ile Phe Val Leu Ile Ile Ser Ser Phe Ser Ile Gly Leu Ala
 515 520 525

Gln Leu Tyr Trp Tyr Tyr Asp Pro Asn Thr Asp Val Cys Leu Pro Gly
 530 535 540

Ala Thr Cys Lys His Ser Ser Asn Val Phe Ser Ser Ile Ala Asp Ser
 545 550 555 560

Tyr Leu Thr Leu Leu Trp Ser Leu Phe Ser Ile Thr Lys Pro Glu Asp
 565 570 575

Thr Asp Val Val Glu Asn His Lys Ile Thr Gln Trp Val Gly Gln Gly
 580 585 590

Met Phe Ile Met Tyr His Cys Thr Ser Ile Ile Val Leu Leu Asn Met
 595 600 605

Leu Ile Ala Met Met Ser His Ser Phe Gln Ile Ile Asn Asp His Ala
 610 615 620

Asp Leu Glu Trp Lys Phe His Arg Thr Lys Leu Trp Met Ala His Phe
 625 630 635 640

Asp Glu Gly Ser Ser Leu Pro Pro Pro Phe Asn Ile Ile Val Thr Pro
 645 650 655

Lys Ser Leu Ile Tyr Val Met Asn Cys Leu Phe Asn Thr Val Arg Trp
 660 665 670

Leu Leu Gly Lys Tyr Thr Tyr Gln Lys Asn Arg Asn Arg Ala Thr Ile
 675 680 685

Arg Arg Pro Gly Tyr Ser Arg Lys Arg Asn Glu Met Glu Lys Ser Gly
 690 695 700

Gly His Asp Asp Asp Ser Leu Lys Pro Leu Thr Tyr Ala Asp Ile Ile
 705 710 715 720

Thr Arg Leu Val Ala Arg Phe Ile His Gln Thr Lys Lys Asp Met Lys
 725 730 735

Met Asp Gly Val Asn Glu Asp Asp Leu His Glu Ile Lys Gln Asp Ile
 740 745 750

Ser Ser

<210> 29
 <211> 183
 <212> PRT
 <213> Homo sapiens

<400> 29

Gln Phe Leu Phe Trp Thr Met Phe Gly Met Glu Glu His Ala Val Val
 1 5 10 15

Asp Val Pro Gln Phe Leu Val Pro Glu Phe Ala Gly Arg Ala Leu Tyr
 20 25 30

Gly Ile Phe Thr Ile Ile Met Val Ile Val Leu Leu Asn Met Leu Ile
 35 40 45

Ala Met Ile Thr Asn Ser Phe Gln Lys Ile Glu Asp Asp Ala Asp Val
 50 55 60

Glu Trp Thr Phe Ala Arg Ser Lys Leu Tyr Leu Phe Tyr Phe Glu Gly
 65 70 75 80

Leu Thr Leu Pro Val Pro Phe Asn Ile Leu Pro Ser Ser Lys Ala Val
 85 90 95

Phe Tyr Leu Leu Arg Arg Ile Cys Gln Phe Ile Cys Cys Cys Cys Ser
 100 105 110

Cys Cys Lys Thr Lys Lys Pro Asp Tyr Pro Pro Ile Ile Thr Phe Ala
 115 120 125

Asn Pro Arg Ala Gly Ala Val Pro Gly Glu Gly Glu Arg Gly Ser Tyr
 130 135 140

Arg Leu His Val Ile Lys Ala Leu Val Gln Arg Tyr Thr Glu Thr Ala
 145 150 155 160

Arg Arg Glu Phe Glu Glu Thr Arg Arg Lys Asp Leu Gly Asn Arg Leu

165

170

175

Thr Glu Leu Thr Lys Thr Ile
180

<210> 30
<211> 117
<212> PRT
<213> Homo sapiens

<400> 30

Thr Ser Val Val Leu Lys Tyr Asp His Lys Phe Ile Glu Asn Ile Gly
1 5 10 15

Tyr Val Leu Tyr Gly Ile Tyr Asn Val Thr Met Val Val Val Leu Leu
20 25 30

Asn Met Leu Ile Ala Met Ile Asn Ser Ser Tyr Gln Glu Ile Glu Asp
35 40 45

Asp Ser Asp Val Glu Trp Lys Phe Ala Arg Ser Lys Leu Trp Leu Ser
50 55 60

Tyr Phe Asp Asp Gly Lys Thr Leu Pro Pro Pro Phe Ser Leu Val Pro
65 70 75 80

Ser Pro Lys Ser Phe Val Tyr Phe Ile Met Arg Ile Val Asn Phe Pro
85 90 95

Lys Cys Arg Arg Arg Arg Leu Gln Lys Asp Ile Gly Asn Gly Glu Trp
100 105 110

Gly Asn Ser Lys Ser
115